

Computer Science Department
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Research Interests

My area of research is Software Engineering with a focus on the design and development of architectures and infrastructures for self-adaptive software systems.

My research interests include self-adaptive systems, continuous software engineering, models at run-time and domain specific languages. I am currently working towards automated software evolution of cloud software applications through quality-driven continuous experimentation.

Education

2016-Present **Ph.D. in Computer Science** - University of Victoria, Victoria, Canada

GPA 3.85/4

Advised by Drs. Hausi Müller and Gabriel Tamura

Thesis topic: Continuous software evolution at run-time

2014-2016 **M.Sc. in Software Engineering** - Universidad Icesi, Cali, Colombia

GPA 3.87/4

Advised by Dr. Gabriel Tamura

Thesis: A framework for generating and deploying dynamic performance monitors for self-adaptive software systems

2009-2014 **B.E. in Systems Engineering** - Universidad Icesi, Cali, Colombia

GPA 3.21/4 • Engineering Dean's list in semesters VI, VII, VIII and IX

Advised by Angela Villota-Gomez and Dr. Gabriel Tamura

Degree project: PaSCAni: A language for run-time V&V of functional requirements (Spanish)

Selected Awards and Honors

2018, 2019 **Travel Scholarship**, CRA-URMD Grad Cohort

2017-2019 **UVic Graduate Award (3 times)**, University of Victoria

2017 **Howard E. Petch Research Scholarship**, University of Victoria

2017-2019 **IBM Advanced Studies Grant**, IBM

2016 **Doctoral Fellowship (full academic scholarship)**, University of Victoria

2014 **Master's Fellowship (full academic scholarship)**, Universidad Icesi

2014 **Student Loan Forgiveness**, Colombian Institute of Educational Credit and Technical Studies

2013 **Top ECAES Exam**, Colombian Institute for the Promotion of Higher Education

2009 **Undergraduate Scholarship (25%)**, Universidad Icesi

2011-2014 **Engineering Dean's list in semesters VI, VII, VIII, & IX**, Universidad Icesi

¹This curriculum vitae was last updated on April 12, 2019. Download the latest version from migueljimenez.co/cv.pdf

Publications

Refereed Journal Articles

- [J.1] Hugo Arboleda, Andrés Paz, **Miguel Jiménez**, and Gabriel Tamura. “[Development and Instrumentation of a Framework for the Generation and Management of Self-Adaptive Enterprise Applications](#)”. en. In: *Ingeniería y Universidad* 20 (Dec. 2016), pp. 303–333. *Rank: Q3 SJR: 0.161*.

Refereed Conference Proceedings

- [C.1] **Miguel Jiménez**, Luis F. Rivera, Norha M. Villegas, Gabriel Tamura, Hausi A. Müller, and Nelly Bencomo. “Software Engineering at Run-time”. In: (Unpublished) To be submitted to ASE 2019.
- [C.2] Luis F. Rivera, Norha M. Villegas, Gabriel Tamura, **Miguel Jiménez**, and Hausi A. Müller. “[UML-driven Automated Software Deployment](#)”. In: *Proceedings of the 28th Annual International Conference on Computer Science and Software Engineering (CASCON)*. IBM, 2018, pp. 257–268. *Rank: B1 (Qualis) Acceptance rate: 27%*.
- [C.3] Prashanti Angara, **Miguel Jiménez**, Kirti Agarwal, Harshit Jain, Roshni Jain, Ulrike Stege, Sudhakar Ganti, Hausi A. Müller, and Joanna W. Ng. “[Foodie Fooderson a Conversational Agent for the Smart Kitchen](#)”. In: *Proceedings of the 27th Annual International Conference on Computer Science and Software Engineering (CASCON)*. IBM, 2017, pp. 247–253. *Rank: B1 (Qualis) Acceptance rate: 27%*.
- [C.4] **Miguel Jiménez**, Norha M. Villegas, Gabriel Tamura, and Hausi A. Müller. “[Deployment Specification Challenges in the Context of Large Scale Systems](#)”. In: *Proceedings of the 27th Annual International Conference on Computer Science and Software Engineering (CASCON)*. IBM, 2017, pp. 220–226. *Rank: B1 (Qualis) Acceptance rate: 27%*.
- [C.5] Hugo Arboleda, Andrés Paz, **Miguel Jiménez**, and Gabriel Tamura. “[A framework for the generation and management of self-adaptive enterprise applications](#)”. In: *2015 10th Computing Colombian Conference (10CCC)*. 2015, pp. 55–62. *SJR: 0.114*.

Refereed Workshop Proceedings

- [W.1] Jean-Michel Bruel and **Miguel Jiménez**. “[DevOps’18 Education Panel](#)”. In: *Software Engineering Aspects of Continuous Development and New Paradigms of Software Production and Deployment*. Ed. by Jean-Michel Bruel, Manuel Mazzara, and Bertrand Meyer. Springer, 2019, pp. 221–226.
- [W.2] **Miguel Jiménez**, Lorena Castaneda, Norha M. Villegas, Gabriel Tamura, Hausi A. Müller, and Joe Wigglesworth. “[DevOps Round-Trip Engineering: Traceability from Dev to Ops and Back Again](#)”. In: *Software Engineering Aspects of Continuous Development and New Paradigms of Software Production and Deployment*. Ed. by Jean-Michel Bruel, Manuel Mazzara, and Bertrand Meyer. Springer, 2019, pp. 73–88.
- [W.3] **Miguel Jiménez**, Luis F. Rivera, Norha M. Villegas, Gabriel Tamura, Hausi A. Müller, and Nelly Bencomo. “An Architectural Framework for Quality-driven Adaptive Continuous Experimentation”. In: *Proceedings of the IEEE/ACM Joint 4th International Workshop on Rapid Continuous Software Engineering and 1st International Workshop on Data-Driven Decisions, Experimentation and Evolution (RCoSE/DDrEE)*. In press. 2019.
- [W.4] **Miguel Jiménez**, Luis F. Rivera, Norha M. Villegas, Gabriel Tamura, Hausi A. Müller, and Pilar Gallego. “[DevOps’ Shift-Left in Practice: An Industrial Case of Application](#)”. In: *Software Engineering Aspects of Continuous Development and New Paradigms of Software Production and Deployment*. Ed. by Jean-Michel Bruel, Manuel Mazzara, and Bertrand Meyer. Springer, 2019, pp. 205–220.
- [W.5] **Miguel A. Jiménez**, Ángela V. Gómez, Norha M. Villegas, Gabriel Tamura, and Laurence Duchien. “[A Framework for Automated and Composable Testing of Component-Based Services](#)”. In: *2014 IEEE 8th International Symposium on the Maintenance and Evolution of Service-Oriented and Cloud-Based Systems (MESOCA)*. 2014, pp. 1–10.

Selected Posters and Contributed Talks

- [P.1] **Miguel Jiménez**, Gabriel Tamura, and Hausi Müller. *Towards Software Engineering at Run-time Through Continuous Experimentation and Evolution*. Poster at 2019 CRA Grad Cohort Workshop for Underrepresented Minorities + Persons with Disabilities (CRA URMD), Waikoloa Village, Hawaii, United States. Mar. 2019.
- [P.2] **Miguel Jiménez**, Gabriel Tamura, and Hausi Müller. *Continuous Deployment Specification for Large-Scale Systems*. Poster at the 28th Annual International Conference on Computer Science and Software Engineering (CASCON), Markham, ON, Canada. Oct. 2018.
- [P.3] **Miguel Jiménez**, Norha M. Villegas, Gabriel Tamura, and Hausi Müller. *Round-trip Software Engineering in DevOps: Making the Infrastructure a Code Committer*. Poster at 2018 CRA Grad Cohort Workshop for Underrepresented Minorities + Persons with Disabilities (CRA URMD), San Diego, California, United States. Mar. 2018.
- [P.4] **Miguel Jiménez**, Norha M. Villegas, Gabriel Tamura, Hausi Müller, Joe Wigglesworth, and Ian Watts. *DevOps Round-trip Software Engineering: On Traceability from Dev to Ops and back*. Talk at the Consortium for Software Engineering Research (CSER), Markham, ON, Canada. May 2018.
- [P.5] **Miguel Jiménez**, Prashanti Angara, Harshit Jain, Kirti Agarwal, Roshni Jain, Hausi Müller, Ulrike Stege, and Joanna Ng. *Cognitive IoT Recipe Maven: Digital Expertise in the Kitchen*. Poster at Centre for Advanced Studies Technical Link Event (CASTLE), Markham, ON, Canada. May 2017.
- [P.6] **Miguel Jiménez**, Hausi Müller, and Gabriel Tamura. *A DSL Approach For Dynamic Performance Monitoring and Deployment*. Petcha Kutcha presentation at the Consortium for Software Engineering Research (CSER), Markham, ON, Canada. Oct. 2016.
- [P.7] **Miguel Jiménez**, Hausi Müller, and Gabriel Tamura. *A DSL Approach For Generating and Deploying Dynamic Performance Monitors for Self-Adaptive Software Systems*. Poster at the 26th Annual International Conference on Computer Science and Software Engineering (CASCON), Markham, ON, Canada. Oct. 2016.

Research Experience

- Jan 2018 - Present **Project Lead Student**
IBM Advanced Studies + Rigi Research Group, University of Victoria, Canada
Advised by Joe Wigglesworth (IBM), Dr. Hausi Müller and Dr. Gabriel Tamura
- Conduct research and collaborate with the team behind IBM Cloud Automation Manager to develop round-trip engineering mechanisms for infrastructure as code, and automate continuous experimentation for deployments on the cloud.
- Jan 2014 - Aug 2016 **Graduate Research Assistant**
i2T/DRISO Research Group, Universidad Icesi, Colombia
Advised by Dr. Gabriel Tamura
- Identified challenges in dynamic performance monitoring of self-adaptive systems and proposed technical solutions following the SOA philosophy to advance the state of the art
 - Designed and implemented two domain-specific languages for dynamic monitoring and distributed deployment
 - Managed the computing resources of the i2T/DRISO research group's computing grid (15 physical machines)
- Jun 2013 - Dec 2013 **Research Assistant Intern**
i2T/DRISO Research Group, Universidad Icesi, Colombia
Advised by Dr. Gabriel Tamura
- Implemented and conducted quantitative experiments for the matrix multiplication problem.

Teaching and Mentoring Experience

- Spring 2018 **Graduate Teaching Assistant**
Assistance Centre in Computer Science, University of Victoria
Tutored students and assisted them with programming assignments in one-on-one sessions.
- 2016-2018 **Graduate Teaching Assistant**
Fundamentals of Programming with Engineering Applications (CSC 111), University of Victoria
Instructor: Dr. Hausi Müller
- Lectured weekly labs and assisted students with programming and lab assignments
 - Co-led weekly meetings and developed teaching material and quizzes
 - Developed [grade-buddy](#), a program to assist teaching assistants and professors in automating the marking of programming assignments
 - Developed a [multi-platform installation assistant](#) to ease the installation of CLion and its dependencies on Windows, Mac and Linux
 - Developed [examgen](#), a program to generate examinations along with their solutions from a YAML input file. The resulting files are rendered to either \LaTeX or Moodle. By creating examgen, we stopped printing **2800** quizzes and reduced marking time by **30h** per term
 - Deployed and managed an online platform to host and mark programming assignments
- Fall 2016 **Graduate Teaching Assistant**
Data Structures I (CSC 225), University of Victoria
Instructor: Dr. Ulrike Stege
Lectured weekly labs, developed scripts to automate marking and graded assignments.
- Spring 2016 **Technical Advisor**
Undergraduate degree project, Interactive Media Design Program - Universidad Icesi
Knowledge management and dissemination: alternative soccer culture
Student: Juan David Flórez Bautista
- Spring 2015 **Tutor**
Undergraduate degree project, Interactive Media Design Program - Universidad Icesi
Folii: natural and interactive encyclopedia mediated by citizen science
Students: Juan Pablo Pérez, Mauricio Alberto Toro
- Spring 2011 **Teaching Assistant**
Data Structures and Algorithms, Universidad Icesi
Instructor: Angela Villota-Gomez
Graded programming assignments.

Invited Talks

- [T.1] **Miguel Jiménez.** *Continuous Value Delivery with DevOps (Spanish)*. Online webinar for university alumni, Universidad Icesi. Mar. 2019.
- [T.2] **Miguel Jiménez,** Gabriel Tamura, and Hausi Müller. *Towards Continuous Assurance of Non-Functional Requirements Through Continuous Experimentation*. Presentation at the 2nd Workshop on DevOps, Annual International Conference on Computer Science and Software Engineering (CASCON). Markham, Canada. Nov. 2018.

Service and Volunteering

- 2011-2012 **Volunteer instructor for the Web Programming Club**
Universidad Icesi, Cali, Colombia
Developed teaching material and lectured members of the programming club on HTML, CSS and JavaScript.

Skills

I have been developing software applications for the past five years. My experience in the industry includes the following freelance development work:

- Online auction application for LaFrancol laboratories (now Abbott)
- Management web application to support the purchasing department of Carvajal Espacios
- Corporate websites and supporting sites (e.g., tutorials & tickets) for small Colombian companies, including SQL Soluciones Informáticas, Ecohotel el Castillo, Juan Felipe Velez Accountant and Z-Graphics

The following is a list of selected skills. You can find more information about my practical knowledge in my Github profile (github.com/jachinte).

■ Programming Languages

Java, Xtend
JavaScript, CSS, HTML
C
Python
Go
C#
Oz
ShellScript

■ Technical Skills

Architecture Design
Build Automation
Software Deployment
Containerized Applications
Continuous Delivery
Data mining (basic)
Infrastructure Provision
Language Engineering
Object Oriented Programming
Performance Monitoring
Service Component Architecture

■ Languages

Spanish (Native)
English (Fluent)
French (Elementary)

References

Dr. Hausi Müller

Associate Dean Research, University of Victoria

Email: hausi@uvic.ca

Website: <https://webhome.cs.uvic.ca/~hausi>

Hausi is my PhD advisor and was the course instructor while I was the head teaching assistant for CSC 111 (cf. Section [Teaching and Mentoring Experience](#)).

Dr. Gabriel Tamura

Associate Professor, Universidad Icesi

Email: gtamura@icesi.edu.co

Website: <https://sites.google.com/site/webgabrieltamura>

Gabriel is my PhD advisor and was my bachelor and master's advisor as well.

Dr. Lorena Castaneda

Software Developer, CityView

Email: lcastane@gmail.com

Website: <http://lcastaneda.com>

Lorena was my professor during my bachelor (2009), my lab mate during my PhD (2016) and is now a good friend of mine.

Dr. Norha M. Villegas

Director of the Software Systems Engineering Professional Program, Universidad Icesi

Email: nvillega@icesi.edu.co

Website: <http://www.icesi.edu.co/tics/nmvillegas>

Norha and I have been research collaborators since 2014, first as part of the [i2t/DRISO](#) research group and now as part of the [Rigi Research Lab](#).